

**What is claimed is:**

1. A method of authorizing transfer of software into an embedded system, comprising the steps of:

5 obtaining a hardware identification code (HWID) relating to one of a service/recalibration tool and an embedded system;

obtaining a software identification code (SWID) relating to at least a portion of software information to be downloaded into said embedded system;

creating a password as a function of said HWID and said SWID; and

10 downloading a password-protected portion of said software information from said service/recalibration tool into said embedded system based on said password.

15 2. The method of claim 1 wherein the downloading step further includes: providing a set of software downloading instructions resident within said service/recalibration tool with said password; and

downloading said password protected portion of said software information from said service/recalibration tool into said embedded system only if said set of software downloading instructions verifies validity of said password.

20 3. The method of claim 1 wherein the step of obtaining said HWID includes:

accessing a memory unit of said embedded system via said service/recalibration tool; and

25 downloading from said memory unit of said embedded system into said service/recalibration tool said HWID.

4. The method of claim 3 wherein the step of downloading a password protected portion of said software information further includes:

providing a set of software downloading instructions resident within said service/recalibration tool with said password; and

downloading said password protected portion of said software information from said service/recalibration tool into said embedded system only if said set of software downloading instructions verifies validity of said password.

5        5.        The method of claim 3 wherein said HWID relates to a system identifier associated with said embedded system.

10        6.        The method of claim 1 wherein the step of obtaining said HWID includes:

accessing a memory unit of said service/recalibration tool;

downloading from said memory unit an identifier associated with said service/recalibration tool;

15        establishing a download number, said download number corresponding to a number of embedded systems authorized to receive said password protected portion of said software information;

forming said HWID as a function of said identifier and said download number.

20        7.        The method of claim 6 wherein the step of downloading a password protected portion of said software information further includes:

providing a set of software downloading instructions resident within said service/recalibration tool with said password; and

25        downloading said password protected portion of said software information from said service/recalibration tool into said embedded system only if said set of software downloading instructions verifies validity of said password.

30        8.        The method of claim 7 wherein the step of downloading a password protected portion of said software information further includes:

providing said set of software downloading instructions with a counter having a count value initially set to a default value; and

downloading said password protected portion of said software information from said service/recalibration tool into said embedded system and modifying said count value only if an absolute difference between said count value and said default value has not exceeded said download number.

9. The method of claim 1 wherein the step of obtaining said HWID includes:

accessing a memory unit of said service/recalibration tool;  
downloading from said memory unit an identifier associated with said service/recalibration tool;  
establishing said HWID as said identifier.

10. The method of claim 9 further including the step of establishing a download number, said download number corresponding to a number of embedded systems authorized to receive said password protected portion of said software information;

and wherein the creating step includes creating said password as a function of said HWID, said SWID and said download number.

11. The method of claim 10 wherein the step of downloading a password protected portion of said software information further includes:

providing a set of software downloading instructions resident within said service/recalibration tool with said password; and

downloading said password protected portion of said software information from said service/recalibration tool into said embedded system only if said set of software downloading instructions verifies validity of said password.

12. The method of claim 11 wherein the step of downloading a password protected portion of said software information further includes:

providing said set of software downloading instructions with a counter having a count value initially set to a default value; and

5 downloading said password protected portion of said software information from said service/recalibration tool into said embedded system and modifying said count value only if an absolute difference between said count value and said default value has not exceeded said download number.

10 13. The method of claim 1 further including the step of providing said HWID and said SWID to a provider of said software information;

wherein the steps of obtaining said HWID and said SWID as well as the step of providing said HWID and said SWID to a provider of said software information are executed by a software transfer technician;

15 and wherein the creating step is executed by said provider of said software information.

14. The method of claim 13 wherein the downloading step further includes:

20 obtaining said password from said software provider;

providing a set of software downloading instructions resident within said service/recalibration tool with said password; and

25 downloading said password protected portion of said software information from said service/recalibration tool into said embedded system only if said set of software downloading instructions verifies validity of said password;

wherein the steps of obtaining said password and providing said password are executed by said service technician.

30 15. The method of claim 1 wherein said embedded system is a control computer associated with a vehicle carrying an internal combustion engine.

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16. A method of authorizing transfer of software into an embedded system, comprising the steps of:

providing a first identifier relating to software transferring hardware and a  
5 second identifier relating to software information to be downloaded into an embedded system to a provider of said software information;

said software provider creating a password as a function of said first and second identifiers; and

10 downloading a password protected portion of said software information into said embedded system based on said password.

17. The method of claim 16 wherein the downloading step further includes:

obtaining said password from said software provider;

15 providing a set of software downloading instructions with said password; and

downloading said password protected portion of said software information into said embedded system only if said set of software downloading instructions verifies validity of said password.

18. The method of claim 16 wherein the providing step includes obtaining said first identifier as a hardware identification code associated with said embedded system.

19. The method of claim 18 wherein the downloading step further includes:

obtaining said password from said software provider;

providing a set of software downloading instructions with said password;

and

downloading said password protected portion of said software information into said embedded system only if said set of software downloading instructions verifies validity of said password.

5           20.    The method of claim 16 wherein the providing step includes:  
              obtaining a hardware identification code associated with a  
service/recalibration tool configured to download said software information into  
said embedded system;  
              establishing a download number, said download number corresponding to a  
10    number of embedded systems authorized to receive said software information; and  
              forming said first identifier as a function of said hardware identification  
code and said download number.

15           21.    The method of claim 20 wherein the downloading step further  
includes:  
              obtaining said password from said software provider;  
              providing a set of software downloading instructions with said password;  
and  
              downloading said password protected portion of said software information  
20    into said embedded system only if said set of software downloading instructions  
verifies validity of said password.

25           22.    The method of claim 21 wherein the downloading step further  
includes:  
              providing said set of software downloading instructions with a counter  
having a count value initially set to a default value; and  
              downloading said password protected portion of said software information  
into said embedded system and modifying said count value only if an absolute  
difference between said count value and said default value has not exceeded said  
30    download number.

23. The method of claim 16 wherein the providing step includes:  
obtaining a hardware identification code associated with a  
service/recalibration tool configured to download said software information into  
said embedded system; and  
establishing said first identifier as said hardware identification code.

24. The method of claim 23 further including the step of establishing a  
download number, said download number corresponding to a number of  
embedded systems authorized to receive said software information;  
and wherein the step of said software provider creating a password includes  
said software provider creating said password as a function of said first and second  
identifiers and also a function of said download number.

25. The method of claim 24 wherein the downloading step further  
includes:  
obtaining said password from said software provider;  
providing a set of software downloading instructions with said password;  
and  
downloading said password protected portion of said software information  
into said embedded system only if said set of software downloading instructions  
verifies validity of said password.

26. The method of claim 25 wherein the downloading step further  
includes:  
providing said set of software downloading instructions with a counter  
having a count value initially set to a default value; and  
downloading said password protected portion of said software information  
into said embedded system and modifying said count value only if an absolute

difference between said count value and said default value has not exceeded said download number.

27. The method of claim 16 wherein the providing step includes obtaining  
5 said second identifier as a software identification code associated with said software information.

28. The method of claim 16 wherein said embedded system is a control computer associated with a vehicle carrying an internal combustion engine.